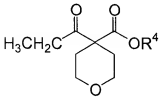
AMENDMENTS TO THE SPECIFICATION

The paragraph beginning on page 4, line 22, is being amended as follows:

The fourth invention of the present invention relates to a 4-propionyl-4-alkoxycarbonyltetrahydropyran represented by the formula (5):



(5)

wherein R^4 has the same meaning as defined above,

wherein CHR^1R^2 in the above-mentioned formula (4) is an ethyl group.

The paragraph beginning on page 7, line 8, is being amended as follows:

The base to be used in the reaction of the first invention may include, for example, an alkali metal hydride such as lithium hydride, sodium hydride, etc.; an alkaline earth metal hydride such as calcium hydride, etc.; an alkali metal alkoxide such as sodium methoxide, sodium ethoxide, sodium n-propoxide, sodium ~~i-propoxide~~ isopropoxide, sodium n-butoxide, sodium ~~t-butoxide~~ tert-butoxide, potassium methoxide, potassium ethoxide, potassium n-propoxide, potassium ~~i-propoxide~~ isopropoxide, potassium n-butoxide, potassium ~~t-butoxide~~ tert-butoxide, etc. (incidentally, these may be used as a corresponding alcohol solution); an alkali metal carbonate such as sodium carbonate, potassium carbonate, etc.; an alkali metal hydrogen carbonate such as sodium hydrogen carbonate, potassium hydrogen carbonate, etc.; an alkali metal hydroxide such as sodium hydroxide, potassium hydroxide, etc., preferably an alkali metal hydride, an alkali metal alkoxide, further preferably sodium hydride and/or sodium methoxide

is/are used. Incidentally, these bases may be used alone or in combination of two or more in admixture.

The paragraph beginning on page 14, line 19, is being amended as follows:

~~Example 4~~ Reference example 2 (Preparation method of 4-acetyltetrahydropyran)

In a flask made of glass having an inner volume of 10 ml and equipped with a stirring device, a thermometer, a dropping funnel and a reflux condenser were charged 202 g (1.0 mol) of 4-acetyl-4-methoxycarbonyltetrahydropyran with a purity of 95% and synthesized in the same manner as in Reference example 1 and 720 ml of methanol, and the temperature of the mixture was raised to 35°C with stirring. Then, to the mixture was gently added dropwise a mixed solution comprising 201 g (2.0 mol) of 35% by weight aqueous hydrogen peroxide solution and 91 ml (0.73 mol) of 8 mol/l aqueous sodium hydroxide solution, and the mixture was reacted at 40°C for 5 hours with stirring. After completion of the reaction, to the resulting reaction mixture was added a saturated aqueous sodium sulfate solution to decompose the remaining hydrogen peroxide, then, the mixture was concentrated under reduced pressure, and the concentrate was extracted three times with 500 ml of ethyl acetate. The organic layer was distilled under reduced pressure (90 to 92°C, 2.0 kPa) to give 113 g (Isolation yield: 85%) of 4-acetyltetrahydropyran with a purity of 99% (areal percentage by gas chromatography) as a colorless liquid.

The paragraph beginning on page 15, line 14, is being amended as follows:

~~Example 5~~ Example 4 (Synthesis of methyl 3-(4-tetrahydropyranyl)-3-oxopropanoate)

In a flask made of glass having an inner volume of 500 ml and equipped with a stirring device, a thermometer, a dropping funnel and a distillation device were charged 35.0 g (273 mmol) of 4-acetyltetrahydropyran synthesized in the same manner as in ~~Example 4~~ Reference example 2, 280.0 g (3.1 mol) of dimethyl carbonate and 16.3 g (302 mmol) of sodium methoxide, and the mixture was reacted at 80 to 85°C for 2 hours with distilling by-producing methanol off. After completion of the reaction, the reaction mixture was cooled to 5 to 10°C, and to the reaction mixture were added 175 ml of toluene, 55 ml (330 mmol) of 6 mol/l hydrochloric acid and 35 ml of water in this order. After the organic layer was separated, the aqueous layer was extracted twice with 70 ml of toluene. The organic layer was concentrated under reduced pressure, and the concentrate was purified by silica gel column chromatography (Eluent; hexane/ethyl acetate=1/1 (volume ratio)) to give 40.9 g (Isolation yield: 76%) of methyl 3-(4-tetrahydropyranyl)-3-oxopropanoate with a purity of 93.9% (analytical value by differential diffractometry) as a colorless liquid.

The paragraph beginning on page 16, line 8, is being amended as follows:

~~Reference example 2~~ Reference example 3 (Synthesis of 4-propionyl-4-methoxy-carbonyltetrahydropyran)

In a flask made of glass having an inner volume of 200 ml and equipped with a stirring device, a thermometer, a dropping funnel and a reflux condenser were charged 13.0 g (0.09 mol) of 2,2'-dichloroethyl ether, 35.9 g (0.26 mol) of anhydrous potassium carbonate, 1.3 g (7.8 mmol) of potassium iodide and 80 ml of N,N-dimethylformamide, and the temperature of the mixture was raised to 80°C with stirring. Then, 20.0 g (0.15 mol) of methyl 3-oxopentanoate

was gently added dropwise to the mixture, and the mixture was reacted at the same temperature for 7 hours. After completion of the reaction, to the reaction mixture were added 200 ml of water and 32.3 g (0.31 mol) of conc. hydrochloric acid to adjust a pH of the mixture to 4.5. Said reaction mixture was extracted three times with 200 ml of ethyl acetate. The organic layer was dried over magnesium sulfate, filtered, and the filtrate was concentrated under reduced pressure. The obtained concentrate was purified by silica gel column chromatography (Eluent; hexane/ethyl acetate=3/1 (volume ratio)) to give 10.1 g (Isolation yield: 55%) of 4-propionyl-4-methoxycarbonyltetrahydropyran as a pale yellow liquid.

The paragraph beginning on page 17, line 3, is being amended as follows:

~~Example 6~~ Example 5 (Preparation method of 4-propionyltetrahydropyran)

In a flask made of glass having an inner volume of 10 ml and equipped with a stirring device, a thermometer, a dropping funnel and a reflux condenser were charged 4.8 g (24 mmol) of 4-propionyl-4-methoxycarbonyltetrahydropyran synthesized in Example 2, 30 ml of water and 9.0 g of conc. sulfuric acid, and the mixture was reacted at 100°C for 10 hours with stirring. After completion of the reaction, to the resulting reaction mixture was added 16.5 g of 50% by weight aqueous sodium hydroxide solution to adjust a pH of the mixture to 4.0. Said reaction mixture was extracted three times with 50 ml of ethyl acetate, and the organic layer was separated and concentrated under reduced pressure. The obtained concentrate was purified by silica gel column chromatography (Eluent; hexane/ethyl acetate=3/1 (volume ratio)) to give 2.58 g (Isolation yield: 76%) of 4-propionyltetrahydropyran as a pale yellow liquid.

The paragraph beginning on page 17, line 29, is being amended as follows:

~~Example 7~~ Example 6 (Synthesis of methyl 3-(4-tetrahydropyranyl)-2-methyl-3-oxopropanoate)

In a flask made of glass having an inner volume of 100 ml and equipped with a stirring device, a thermometer, a dropping funnel and a distillation device were charged 1.28 g (9 mmol) of 4-propionyltetrahydropyran synthesized in the same manner as in ~~Example 6~~ Example 5, 16.0 g (180 mmol) of dimethyl carbonate and 1.2 g (22 mmol) of sodium methoxide, and the mixture was reacted at 80 to 85°C for 2 hours with distilling by-producing methanol off. After completion of the reaction, the reaction mixture was cooled to 5 to 10°C, to the reaction mixture were added 50 ml of ethyl acetate, 3.4 g (24 mmol) of 6 mol/l hydrochloric acid and 15 ml of water in this order. After the organic layer was separated, the aqueous layer was extracted twice with 50 ml of ethyl acetate. The organic layer was concentrated under reduced pressure, and the concentrate was purified by silica gel column chromatography (Eluent; hexane/ethyl acetate=3/1 (volume ratio)) to give 0.60 g (Isolation yield: 33%) of methyl 3-(4-tetrahydropyranyl)-2-methyl-3-oxopropanoate as a colorless liquid.

The paragraph beginning on page 18, line 23, is being amended as follows:

~~Example 8~~ Example 7 (Synthesis of ethyl 3-(4-tetrahydropyranyl)-3-oxopropanoate)

In an apparatus made of glass having an inner volume of 100 ml and equipped with a stirring device, a thermometer, a reflux condenser and a dropping funnel were charged 4.56 g (31 mmol) of diethyl carbonate and 3.98 g (58 mmol) of sodium ethoxide, and the temperature of the liquid was raised to 85°C. Then, 5.0 g (39 mmol) of 4-acetyltetrahydropyran was gently added dropwise to the mixture. Further, 4.56 g (31 mmol) of diethyl carbonate was added to the

mixture, and the mixture was reacted at 80 to 90°C for 1 hour. After completion of the reaction, 5 ml of 2-butanol was added to the mixture at the same temperature, and after cooling to room temperature, 5 ml of ethanol was added to the mixture (this is called to as the reaction mixture A).